AMENDMENTS TO THE CLAIMS

1 (previously presented). A multiple user communications system, comprising:

at least one receiver for receiving a plurality of signals,

at least one optical processor for optically correlating at least one of the plurality of received signals simultaneously against a plurality of hypothesized signals to generate data comprising a plurality of correlations, the optical processor comprising at least a one-dimensional optical correlator configured to produce an output comprising a multi-dimensional output array having a first dimension and a second dimension, the first dimension associated with a hypothesis and the second dimension associated with a correlation result,

at least one receiver algorithm for applying to the data generated by the optical processor for at least one of identifying, sorting and separating the plurality of received signals based upon the generated plurality of correlations,

whereby interference among the plurality of received signals is reduced.

2 (original). The system of claim 1, comprising a controller for providing the plurality of hypothesized signals to the optical processor.

3 (original). The system of claim 1, wherein the optical processor comprises a plurality of one-dimensional optical correlators for generating an output comprising a two-dimensional correlation matrix.

4 (original). The system of claim 1, comprising a converter for converting the plurality of received signals into a form suitable for input to the optical processor.

5 (original). The system of claim 1, wherein the receiver algorithm comprises a complex signal-to-noise enhancement algorithm.

6 (original). The system of claim 5, wherein the receiver algorithm performs at least one of multiuser detection, multipath combining and Doppler compensation.

7 (original). The system of claim 1, wherein the receiver algorithm comprises a complex multiuser receiver algorithm.

8 (currently amended). The system of claim 1 wherein the multiple user communications system comprises a [DS/SS] direct sequence spread spectrum CDMA communications system and wherein the receiver algorithm comprises a Multiple User Detection (MUD) algorithm.

9 (previously presented). A method of reducing interference in a multiple user communications system, comprising:

receiving a plurality of signals,

optically correlating at least one of the plurality or received signals simultaneously against a plurality of hypothesized signals to generate data comprising a plurality of correlations,

the step of optically correlating comprising configuring at least a one-dimensional optical correlator to produce an output comprising a multi-dimensional output array having a first dimension and a second dimension, the first dimension associated with a hypothesis and the second dimension associated with a correlation result,

applying at least one receiver algorithm to the data for at least one of identifying, sorting and separating the plurality of received signals based upon the generated plurality of correlations,

whereby interference among the plurality of received signals is reduced.

10 (original). The method of claim 9, wherein the receiver algorithm comprises a complex signal-to-noise enhancement algorithm.

11 (original). The method of claim 10, wherein the receiver algorithm performs at least one of multiuser detection, multipath combining and Doppler compensation.

12 (original). The method of claim 9, wherein the receiver algorithm comprises a complex multiuser receiver algorithm.

13 (currently amended). The method of claim 9 wherein the multiple user communications system comprises a [DS/SS] direct sequence spread spectrum CDMA communications system and wherein the receiver algorithm comprises a Multiple User Detection (MUD) algorithm.